

CLAIMS

What is claimed:

1. A subsea well construction, comprising:
 - a casing string disposed in a subsea well;
 - a production string disposed in the casing string;
 - an alternative path conduit disposed exterior to the production string;
 - the alternative path conduit passing through a subsea wellhead; and
 - at least one sensor deployed in the alternative path conduit, the at least one sensor adapted to measure a parameter of interest.
2. The construction of claim 1, wherein the alternative path conduit is proximate to the casing string.
3. The construction of claim 1, wherein the alternative path conduit is exterior to the casing string.
4. The construction of claim 3, wherein the alternative path conduit is cemented in place.
5. The construction of claim 1, wherein the parameter of interest is one of temperature, distributed temperature, pressure, distributed pressure, acoustic energy, electric current, magnetic field, electric field, flow, chemical properties, or a combination thereof.

6. The construction of claim 1, wherein the at least one sensor comprises an optical fiber.
7. The construction of claim 6, wherein the optical fiber is deployed in the alternative path conduit by use of frictional fluid force.
8. The construction of claim 6, wherein the at least one sensor comprises a distributed temperature sensor of which the optical fiber is a part thereof.
9. The construction of claim 8, wherein the distributed temperature sensor measures the thermal profile of at least part of the subsea well.
10. The construction of claim 9, wherein the distributed temperature sensor utilizes optical time domain reflectometry to measure the thermal profile.
11. The construction of claim 9, wherein the thermal profile is used for one of providing inflow conformance, monitoring well production, monitoring well integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves.
12. The construction of claim 6, wherein the optical fiber is used for one of providing inflow conformance, monitoring well production, monitoring well

integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves

13. The construction of claim 6, wherein the at least one sensor comprises at least two optical fibers.

14. The construction of claim 13, wherein the at least two optical fibers comprise a multimode optical fiber and a single mode optical fiber.

15. The construction of claim 1, wherein the at least one sensor is included on an optical fiber disposed in the alternative path conduit.

16. The construction of claim 1, wherein the at least one sensor is a fiber optic sensor.

17. The construction of claim 1, wherein the at least one sensor is an electrical sensor.

18. The construction of claim 1, wherein the alternative path conduit has a u-shape.

19. A method to obtain information from a subsea well, comprising:
deploying a casing string in a subsea well;

disposing a production string in the casing string;
locating an alternative path conduit exterior to the production string;
passing the alternative path conduit through a subsea wellhead;
deploying at least one sensor in the alternative path conduit; and
measuring a parameter of interest with the at least one sensor.

20. The method of claim 19, wherein the locating step comprise locating the alternative path conduit proximate to the casing string.

21. The method of claim 19, wherein the locating step comprises locating the alternative path conduit exterior to the casing string.

22. The method of claim 21, further comprising cementing the alternative path conduit in place.

23. The method of claim 1, wherein the parameter of interest is one of temperature, distributed temperature, pressure, distributed pressure, acoustic energy, electric current, magnetic field, electric field, flow, chemical properties, or a combination thereof.

24. The method of claim 1, wherein the at least one sensor comprises an optical fiber.

25. The method of claim 24, wherein the deploying at least one sensor step comprises deployed the optical fiber in the alternative path conduit by use of frictional fluid force.
26. The method of claim 24, wherein the at least one sensor comprises a distributed temperature sensor of which the optical fiber is a part thereof.
27. The method of claim 26, wherein the measuring step comprises measuring the thermal profile of at least part of the subsea well by use of the distributed temperature sensor.
28. The method of claim 27, wherein the measuring step comprises utilizing optical time domain reflectometry to measure the thermal profile.
29. The method of claim 27, wherein the thermal profile is used for one of providing inflow conformance, monitoring well production, monitoring well integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves.
30. The method of claim 24, wherein the optical fiber is used for one of providing inflow conformance, monitoring well production, monitoring well integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves

31. The method of claim 24, wherein the at least one sensor comprises at least two optical fibers.
32. The method of claim 31, wherein the at least two optical fibers comprise a multimode optical fiber and a single mode optical fiber.
33. The method of claim 19, wherein the at least one sensor is included on an optical fiber disposed in the alternative path conduit.
34. The method of claim 19, wherein the at least one sensor is a fiber optic sensor.
35. The method of claim 19, wherein the at least one sensor is an electrical sensor.
36. The method of claim 19, wherein the alternative path conduit has a u-shape.